



# The February 2021 Cold Weather Outages in Texas and the South Central United States

FERC, NERC and Regional Entity Joint Staff Report (November 2021)

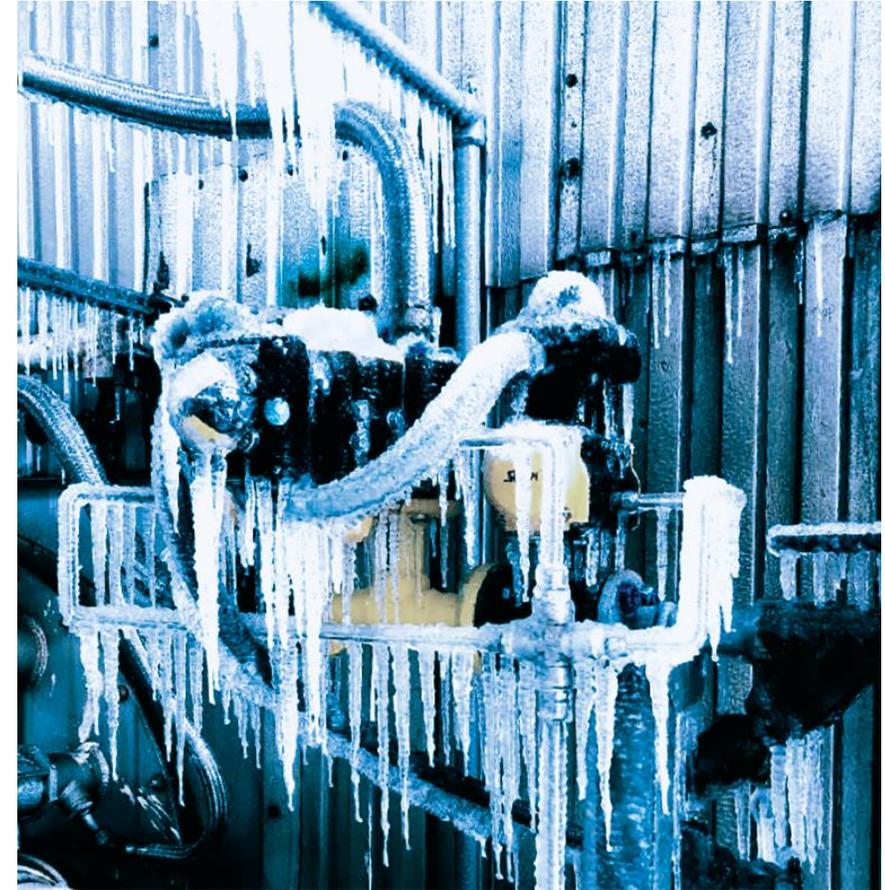
Tracking of Responses to Recommendations – December 2022



*This report was prepared by the staff of the Federal Energy Regulatory Commission in consultation with staff from the North American Electric Reliability Corporation and its Regional Entities. This report does not necessarily reflect the views of the Commission.*

# Extreme Cold Weather February 2021 Bottom Line

- During the week of February 14, 2021, for over two consecutive days, ERCOT averaged 34,000 megawatts (MW) of generation outages, nearly half of ERCOT's 2021 all-time winter peak load of 69,871 MW.
- Largest firm load shed event in U.S. history (23,418 MW), third largest in quantity of outaged MW of load (August '03 and August '96 blackouts).
- Fourth event in the past 10 years which jeopardized bulk-power system reliability due to unplanned generating unit outages which escalated due to cold weather.



# Progress Made on All Recommendations

Recommendation Category	Recommendation Topics Summary	Status
<b>Freeze Protection</b>	New standards for electric generation and natural gas facility cold weather preparedness plans	
<b>Gas – Electric Coordination</b>	Natural gas – electric forums; fuel contract risks/limited fuel scenarios for electric generation	
<b>Grid Operations</b>	Bi-directional power transfer studies; load forecasting; load shed coordination and training	
<b>State-Level</b>	Enhance emergency response centers; additional demand response; energy efficiency improvements	
<b>Further Studies</b>	ERCOT – Additional links and blackstart reliability; critical natural gas infrastructure identification	

 Progressing	 Complete
 Delayed	 No Identified Plan/Owner



# Key Response Status: Freeze Protection

- **Key Recommendation 1**, standards for generation cold weather reliability
  - New cold weather Standards for generator freeze protection filed with Commission October 28, 2022
  - Ongoing work to address remainder of recommendation 1
- **Key Recommendation 3**, host winter readiness technical conference
  - Generator winter readiness technical conference held April 27-28, 2022
- **Key Recommendation 5**, requirements for natural gas facility infrastructure cold weather preparedness plans
  - Rule requiring natural gas facility cold weather preparedness plans adopted by Texas Railroad Commission on August 30, 2022



# Response Status: Gas - Electric Coordination

- **Key Recommendation 7, establish natural gas - electric reliability forum**
  - Established natural gas-electric reliability forums for New England on September 8, 2022, and national forum with NAESB, NERC and NARUC on August 30, 2022
- **Key Recommendation 9, peak load forecasts and reserve margin calculations**
  - ERCOT, MISO and SPP all are making responsive changes to this recommendation about winter peak load forecasts and reserve margin calculations



# Response Status: Grid Operations

- **Recommendations** being addressed by NERC committees include:
  - improve rotational load shed plans and extreme scenario rotational load shed training (10)
  - improve near-term load forecasts and analyze intermittent generation to improve load forecasts (16, 17)
  - perform bi-directional seasonal transfer studies (20)
  - report times for generation and transmission outages (23)
- **Recommendation 22**, ensure generator protection settings / underfrequency load shed coordination
  - ERCOT – recommending new rule on generator and underfrequency load shed coordination



# Response Status: State-Level

- **Several recommendations involve matters that fall under state jurisdiction, including Recommendations 2 (generator compensation opportunities for investments), 18 (additional rapidly-deployable demand response) and 19 (retail incentives for energy efficiency improvements)**
  - **Team is coordinating with members of National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Electric Reliability and Resilience**



# Response Status: Further Studies

- **Recommendation 24**, address natural gas supply shortfalls
  - Combined with Key Recommendation 7, establish natural gas/electric forum
- **Recommendation 25**, ERCOT - additional interconnection links
  - Links proposed: 2,000 MW to Eastern, 1,500 MW to Western Interconnections
- **Recommendation 26**, black start unit availability – ERCOT footprint
  - Team scoping and staging study for kickoff in early 2023
- **Recommendation 27**, low-frequency effects in Interconnections
  - Standards development project on generator ride-through initiated
- **Recommendation 28**, critical natural gas infrastructure identification
  - Texas adopted electricity supply chain map of critical interdependent natural gas and electric infrastructure in April 2022





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